

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: STP-9108(4) & (5) Clayton
P. I. Nos.: 751770 & 751775
Battle Creek Road Widening

OFFICE: Engineering Services

DATE: April 22, 2008

FROM: Brian K. Summers, P.E., Project Review Engineer *REW*

TO: Bryant Poole, District Engineer, Chamblee

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. Incorporate alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT No.	Description	Savings PW & LCC	Implement	Comments
ROADWAY (RD)				
RD-1	Use 11' lanes throughout the project	\$1,105,458	Yes	This should be done.
RD-2	Review profile grade to reduce Borrow	\$264,000	Yes	This should be done.
RD-4	Use 12' shoulders	\$301,400	Yes	This should be done.
RD-5	Re-align Battle Creek Road and Mt. Zion Blvd tie-in	Design Suggestion	No	Would require a total take of a gas station and would require a significant amount of additional Right of Way. There would also be additional stream impacts for the construction of a new box culvert.

ALT No.	Description	Savings PW & LCC	Implement	Comments
ROADWAY (RD) - continued				
RD-6	Limit side road improvements	\$79,211	Yes	This should be done.
RD-10	Construct an operational improvement project – a six lane section at the I-75 Interchange	Design Suggestion	Yes/modified	The current project description in the ARC Transportation Improvement Plan (TIP) calls for a 4-lane section. A revision would delay the project in addition to adding additional Environmental and Right of Way impacts. However, the need for additional improvements, such as an Auxiliary Lane across the I-75 Bridge by restriping and reconfiguration of the median will be evaluated.
RD-16	Modify median opening at Sta. 192+00	Design Suggestion	Yes	This should be done.
RD-17	Close median at Mt. Zion Boulevard	Design Suggestion	No	This was previously considered and it was determined that it would create operational impacts to the Mt. Zion Road Intersection as well as creating the need for additional improvements outside the limits of the project.
RD-18	Close Home Depot driveway	Design Suggestion	No	This is a major access point to the Home Depot and would create additional operational concerns at the Mt. Zion Road Intersection. Damages may also have to be paid to Home Depot if this driveway is closed.
STRUCTURES (ST)				
ST-1	Use modular block walls in lieu of gravity walls	\$783,920	Yes	This should be done.

ALT No.	Description	Savings PW & LCC	Implement	Comments
STRUCTURES (ST) - continued				
ST-2	Use Conspan in lieu of Box Culvert at Panther Creek	\$92,192	No	The costs shown do not include costs for any footing work or for a transition section from the Conspan Structure to the existing Box Culvert Structure.
ST-3	Use Guardrail and pedestrian rail in lieu of parapet	\$19,190	No	This would introduce a "T" Beam Guardrail section at the back of curb as well as an end section to protect the end of the guardrail.
ST-4	Reconfigure lanes and sidewalk to utilize new bridge only	\$690,901	No	Results in a sub-standard shoulder width that would require a Design Exception. Would not utilize all of the existing available bridge width.
ST-5	Perform partial modifications to existing bridge and abandon remaining portion	\$468,198	No	A large part (17.5') of the existing bridge would not be used and would be abandoned. The Bridge Maintenance Office has recommended that the oldest part of the existing bridge be rehabilitated with Carbon Fiber Stirrups. This would give a total usable bridge width of 84'.
RIGHT OF WAY (ROW)				
ROW-1	Re-align Mill Lake Way and Sandlewood Drive	\$2,011,186	No	This would still result in numerous impacts to several parcels on each side of Mill Lake Way since there is a significant grade change approaching the intersection. The VE Team did not take this grade change into consideration. Clayton County is responsible for all Right of Way costs on these Projects.

ALT No.	Description	Savings PW & LCC	Implement	Comments
RIGHT OF WAY (ROW) - continued				
ROW-4	Limit ROW taking and ease construction by segregating widening to one side	\$4,599,963	No	The alignment was selected to minimize and avoid Environmental and Right of Way impacts and was presented to the public at a PIOH in June 2005. In many locations, the widening has been done on one side but in other areas to avoid impacts widening was accomplished symmetrically.
DRAINAGE (DR)				
DR-1	Reduce the amount of dual trunk lines	\$99,363	Yes	This should be done.

A meeting was held on April 21, 2008 to discuss the above recommendations. Sean Johnson with Kimley Horn, Mike Lobdell, Scott Lee, and Gerald Ford with District 7 Design and Brian Summers, Ron Wishon, and Lisa Myers with Engineering Services were in attendance.

Approved:  Date: 5/1/2008
Gerald M. Ross, P. E., Chief Engineer

BKS/REW

Attachments

c: Gus Shanine
Todd Long
Bryant Poole
Mike Lobdell
Scott Lee
Gerald Ford
Mac Cranford
Paul Liles
Dill...

STP-9108(4) & (5) Clayton
P. I. Nos.: 751770 & 751775
VE Study Implementation
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Bill Duvall
Judy Meisner
Amber Perkins
Cindy Treadway
James Magnus
Mickey McGee
Loren Bartlett
Ken Werho
Nabil Raad
Lisa Myers



Preconstruction Status Report By PI Number

Print Date: 04/22/2008

PROJ ID	COUNTY	DESCRIPTION	MGMT. ROW DATE	SCHED DATE	MGMT. LET DATE
751770-	Clayton	BATTLECREEK/MT ZION BLVD FM SOUTHLAKE PKWY TO SOMERTON DR	Jan-09	Dec-11	Jan-11
STP00-9108-00(004)	FIELD DIST: 7				
TIP #: CL-019	TWIN:	US:	Phase	Approved	Proposed
MPO: Atlanta TMA		EST DATE: 5/8/2007	PE	1997	1997
MODEL YR: 2020			ROW	LOCL	LOCL
PROJ MGR: Lobdell, Mike	PROJ LENGTH: 3.48		CST	LR	LR
PROG Reconstruction/Rehabili	TYPE Widening		CST	LR	LR
TYPE: tation	WORK:				
CONCEPT: ADD 4U	LET RESP: DOT	Congressional			13

SCHED START	SCHED FINISH	ACTIVITY	ACTUAL START	ACT/EST FINISH	PCT	DISTRICT COMMENTS
		Define Project Concept	1/27/2005	4/5/2005	100	CLAYTON/KIMLEY/HORN
		Concept Meeting	4/11/2005	4/11/2005	100	(6/13/05) PIOH HELD 6/7/05.
		Concept Submittal and Review	12/23/2005	12/23/2005	100	NEED ENV. APPVL. TO SCHED.
		Receive Preconstruction Concept Approval	1/10/2006	1/20/2006	100	PFPR. (3/26/07) PIOH TO BE
		Management Concept Approval Complete	1/23/2006	1/25/2006	100	SCHED. SOON. (5/23/07) NEED
4/30/2008	5/6/2008	Value Engineering Study	8/6/2007		96	TO REQ. VE STUDY. NEED
		Public Information Open House Held	6/7/2005	6/7/2005	100	ENVIRON. APPVL. (8/21/07)
4/25/2008	10/13/2008	Environmental Approval			0	1625 FOR VE STUDY SENT.
10/13/2008	10/13/2008	Public Hearing Held			0	NEED MOST RECENT COST
4/28/2008	5/30/2008	Field Surveys/SDE			0	EST. ALONG W/CONCEPT
4/25/2008	5/7/2009	Preliminary Plans	1/30/2006		71	REPORT REQUEST VE STUDY.
6/6/2008	8/21/2008	404 Permit Obtainment			0	WAITING FOR ENV. APPVL.
5/29/2009	6/1/2009	PFPR Inspection			0	(1/2/08) VE STUDY ON DEC 3-6.
7/7/2009	9/28/2009	R/W Plans Preparation			0	ENV. DOC. HELD DUE TO
11/24/2009	11/27/2009	R/W Plans Final Approval			0	LOGICAL TERMINI. VE STUDY
7/7/2009	7/9/2009	L & D Report Development and Approval			0	REPT. REC'D 1/2/08. (2/25/08)
11/30/2009	10/5/2011	R/W Acquisition			0	FINALIZING VE STUDY
4/19/2010	4/30/2010	Stake R/W			0	RESPONSES, NEED ENV. &
		Soil Survey	7/21/2006	10/27/2006	100	PLANS.
7/10/2009	3/19/2010	Final Design			0	
4/12/2010	4/13/2010	FFPR Inspection			0	
4/27/2010	5/10/2010	FFPR Response			0	

BIKE PROVISIONS INCLUDED?: Y MEASUREMENT SYSTEM: E CONSULTANT: L UT EST: \$ 0.00

PDD: LOCALS DOING DESIGN, 4/10/98 . GFX. Coord w/751775
Bridge: NO BRIDGE REQUIRED
Design: GLF/UPDATE CE 1/93, DZN BY CLAYTON CO. COUNTY ON HOLD
EIS: EA 1 NotAprvd | OnSchedROW 1 TREADWAY(Upd3.3.08)
LGPA: REV PMA SGN CLAYTON DO PE|ROW& UTILITIES 4-12-02.
Programming: PR2/P=11-12-96
ROW: 59 BB| NO SCTIVITY BY LOCALS. 9-03-97
Railroad: NO
Traffic Op: AWAITING LOCAL PFPR PLANS FOR REVIEW 031004
Utility: YPE:NEED PLANS 08/07:SUE
EMG: RECST/REHAB (WIDENING); PE BY COUNTY

R/W INFORMATION:

PREL PARCEL CT: 59 TOTAL PARCEL CT: ACQUIRED BY: LOC ACQ MGR:
UNDER-REVIEW CT: RELEASED CT: OPT-PEND CT: DEEDS CT: COND-PEND CT: COND-FILED CT:
RW CERT DT: ACQUIRED CT: RELOCATION CT:



Preconstruction Status Report By PI Number

Print Date: 04/22/2008

PROJ ID	COUNTY	DESCRIPTION	MGMT. ROW DATE	SCHED DATE	MGMT. LET DATE
751775-	Clayton	BATTLE CREEK RD FM VALLEY HILL RD TO SOUTHLAKE PKWY	Jan-09	Feb-13	Jan-11

STP00-9108-00(005) **FIELD DIST:** 7
TIP #: CL-017 **TWIN:** **US:**
MPO: Atlanta TMA **EST DATE:** 5/8/2007
MODEL YR: 2020
PROJ MGR: Lobdell, Mike **PROJ LENGTH:** 2.18
PROG: Reconstruction/Rehabili **TYPE:** Widening
TYPE: tation **WORK:**
CONCEPT: ADD 4U(MED 20) **LET RESP:** DOT Congressional 13

SCHED START	SCHED FINISH	ACTIVITY	ACTUAL START	ACT/EST FINISH	PCT	DISTRICT COMMENTS
		Define Project Concept	1/27/2005	4/5/2005	100	CLAYTON/KIMBLEY HORN
		Concept Meeting	4/11/2005	4/11/2005	100	(6/13/05) PIOH 6/7/05. NEED
		Concept Submittal and Review	12/23/2005	12/23/2005	100	ENV. FOR PFPR. (3/26/07) PIOH
		Receive Preconstruction Concept Approval	1/10/2006	1/20/2006	100	TO BE SCHED. SOON. (5/23/07)
		Management Concept Approval Complete	1/23/2006	1/25/2006	100	NEED VE STUDY. NEED
4/30/2008	5/6/2008	Value Engineering Study	8/6/2007		96	ENVIRON. (8/21/07) 1625 FOR
		Public Information Open House Held	6/7/2005	6/7/2005	100	VE STUDY SENT. NEED
4/25/2008	12/7/2009	Environmental Approval			0	UPDATED COST EST. ALONG
6/22/2009	6/22/2009	Public Hearing Held			0	W/CONCEPT REPORT REQ. VE
4/24/2008	4/24/2008	Mapping			0	STUDY. WAITING FOR ENV.
4/28/2008	5/30/2008	Field Surveys/SDE			0	APPVL. ISSUES W/VALLEY
4/25/2008	11/21/2008	Preliminary Plans	1/30/2006		83	HILL RD'S LOW LOST BEING
10/8/2008	1/7/2009	Preliminary Bridge Design			0	LOGICAL TERMINI. TRAFFIC
4/25/2008	5/30/2008	Underground Storage Tanks			0	DATA SENT TO FHWA FOR
9/1/2008	1/19/2009	404 Permit Obtainment			0	DECISION ON LOGICAL
12/29/2009	12/30/2009	PFPR Inspection			0	TERMINI. (1/2/08) VE STUDY
2/4/2010	4/28/2010	R/W Plans Preparation			0	DONE ON DEC. 3-6. ENVIRON.
6/24/2010	6/29/2010	R/W Plans Final Approval			0	DOC. HELD DUE TO LOGICAL
2/4/2010	2/8/2010	L & D Report Development and Approval			0	TERMINI. RECD VE STUDY
6/30/2010	12/17/2012	R/W Acquisition			0	REPT. 1/2/08. (2/25/08
11/18/2010	12/1/2010	Stake R/W			0	FINALIZING VE STUDY
		Soil Survey	7/24/2006	10/27/2006	100	RESPONSES. NEED ENV. &
1/8/2009	1/19/2009	Bridge Foundation Investigation			0	PLANS.
2/9/2010	10/19/2010	Final Design			0	
12/23/2008	4/13/2009	Final Bridge Plans Preparation			0	
11/10/2010	11/11/2010	FFPR Inspection			0	
11/25/2010	12/8/2010	FFPR Response			0	

BIKE PROVISIONS INCLUDED?: N MEASUREMENT SYSTEM: E CONSULTANT: L UTEST: \$ 0.00

PDD: LOCALS DOING DESIGN. 4/10/98 GFX. Coord w/751770. No activity. 3/12/03. Now moving. 7/19/04.
Bridge: BRIDGE REQUIRED
Design: GLF
EIS: EA I NotAprvd | OnSchedROW | TREADWAY(Upd3.08)
LGPA: REV PMA SGN CLAYTON DO PE|ROW & UTILITIES 2-19-02.
Programming: PR2/P=11-12-96#1 5-07
ROW: 50 BB| NO ACTIVITY BY LOCALS. 9-03-97
Railroad: CGA
Traffic Op: AWAITING LOCAL PFPR PLANS FOR REVIEW 031004
Utility: YPF:NEED PLANS 08/07;OCD SUE
EMG: RECST/REHAB (WIDENING); PE BY COUNTY

R/W INFORMATION:

PREL PARCEL CT: 50 TOTAL PARCEL CT: ACQUIRED BY: LOC ACQ MGR:
UNDER-REVIEW CT: RELEASED CT: OPT-PEND CT: DEEDS CT: COND-PEND CT: COND-FILED CT:
RW CERT DT: ACQUIRED CT: RELOCATION CT:

Wishon, Ron

From: Ford, Gerald
Sent: Thursday, May 01, 2008 8:49 AM
To: Wishon, Ron
Cc: Lobdell, Mike; Lee, Scott; Summers, Brian; Myers, Lisa
Subject: FW: VE Implementation --- STP-9108(4) & (5) Clayton --- {P.I. Nos. 751770 & 751775} --- Battle Creek Road Widening

Ron,

See email below.

Thanks,

Gerald Ford
GDOT - District 7 - Preconstruction
(770) 986-3982 direct

From: Sean.Johnston@kimley-horn.com [mailto:Sean.Johnston@kimley-horn.com]
Sent: Wednesday, April 30, 2008 9:09 AM
To: Ford, Gerald
Cc: Daveitta.Jenkins@CH2M.com; Gary.Newton@kimley-horn.com
Subject: RE: VE Implementation --- STP-9108(4) & (5) Clayton --- {P.I. Nos. 751770 & 751775} --- Battle Creek Road Widening

Gerald,

Responses to Gerald Ross' questions are below:

RD1: The truck percentage is 3%. There are no busses operating along the majority of the corridor, with the exception of a short (approximately 300 feet) section of Mt. Zion Boulevard between Mt. Zion Road and Mt. Zion Parkway that carries CTRAN Route 503.

RD17: The intersections were modeled in SYNCHRO and it was determined that, if Mt. Zion Parkway remains open as currently designed, the AM, PM, and Saturday peak hour LOS at the intersections of Mt. Zion Boulevard at Mt. Zion Road and Mt. Zion Boulevard at Mt. Zion Parkway will be D or better in the design year. If Mt. Zion Parkway is closed, the PM and Saturday peak LOS at the intersection of Mt. Zion Boulevard and Mt. Zion Road will degrade to LOS F in the design year.

Thanks, and let me know if you have further questions.

Sean Johnston, P.E.
Kimley-Horn and Associates, Inc.
404-419-8716

From: Ford, Gerald [mailto:gford@dot.ga.gov]
Sent: Thursday, April 24, 2008 3:23 PM
To: Johnston, Sean
Subject: FW: VE Implementation --- STP-9108(4) & (5) Clayton --- {P.I. Nos. 751770 & 751775} --- Battle Creek Road Widening

Sean,

Please respond to email below.

Thanks,

Gerald Ford
GDOT - District 7 - Preconstruction
(770) 986-3982 direct

From: Wishon, Ron
Sent: Thursday, April 24, 2008 2:45 PM
To: Lobdell, Mike; Lee, Scott; Ford, Gerald
Cc: Summers, Brian; Myers, Lisa
Subject: VE Implementation --- STP-9108(4) & (5) Clayton --- {P.I. Nos. 751770 & 751775} --- Battle Creek Road Widening

Hey guys:

Gerald sent the VE Implementation Letter back. He specifically needs some additional information/justification on RD-1 and RD-17.

- For RD-1, what is the truck and bus traffic on this corridor?
- For RD-17, what problems will this cause? What program was run to determine impacts? Could access from I-75 SB not be allowed to make left turns?

Please let me know about these as soon as you can.

Thanks,

*Ron Wishon
Assistant Project Review Engineer
Engineering Services
Room 261
404-651-7470
404-463-6131 (FAX)*

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DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE: STP-9018(4)(5), Clayton County
PI No. 751770 & 751775
Battlecreek Rd Widening

OFFICE: District Seven
Chamblee
DATE: 4/8/2008

FROM: Bryant Poole, Metro District Engineer

TO: Brian Summers, P.E., Project Review Engineer

Subject: Responses to Value Engineering Study

The District Seven Preconstruction Office met with Clayton County and the design consultants designing the subject projects to discuss the recommendations from the Value Engineering Study. Below are the comments received in italics and our responses.

RD-1	<i>Use 11' lanes throughout the project</i>
Implement	This alternative is recommended. Battle Creek Road and Mt. Zion Blvd. are classified as urban collectors. AASHTO policy allows for 11-foot lanes along collectors. A variance from GDOT policy of 12-foot minimum lane widths will be required. GDOT Design staff will consider keeping lane widths 12 feet in the vicinity of I-75. Classification counts were not taken in this area, but the truck percentage is assumed to be 3%.
RD-2	<i>Review profile grade to reduce borrow</i>
Implement	This alternative is recommended. The profile will be examined during final design to determine if it can be lowered while still meeting 45mph speed design. Several large fill sections along Mt. Zion Blvd. may still be necessary in order to meet speed design.
RD-4	<i>Use 12' Shoulders</i>
Implement	This alternative is recommended. Location of utilities within the shoulder area will be considered when modifying shoulder widths.
RD-5	<i>Re-align Battle Creek Road and Mt. Zion Blvd. tie-in</i>
Do Not Implement	This design suggestion is not recommended. Realignment of the intersection would require a total take of the existing gas station, and would require a significant amount of additional right-of-way. Also, additional stream impacts and construction of a new box culvert would be created by the realignment.

RD-6	<i>Limit side road improvements</i>
Implement	This alternative is recommended where feasible. For some side roads, such as relocated Mt. Zion Blvd. at Battle Creek Road, Tara Road and Mt. Zion Parkway, the length of side road construction is dictated by the need to taper out additional lanes or to meet design speed criteria for the profile grade. The VE team should provide more specific recommendations by showing side roads that can be reduced and the cost savings.
RD-10	<i>Construct an operational improvement – 6 lane section at I-75 interchange</i>
Implement Modified	This design suggestion is recommended with modifications. The current project description in the ARC Transportation Improvement Plan (TIP) calls for a 4-lane section. A revision to the project in the TIP would delay the project schedule and create the need for further public involvement activities. Also, the additional right-of-way impacts to the Mt. Zion Baptist Church, cemetery, and various businesses along the corridor would be prohibitive. The design team will evaluate traffic data as well as the existing bridge width across I-75 to determine if an additional auxiliary lane can be created by restriping and reconfiguration of the median.
RD-16	<i>Modify median opening at STA 192+00</i>
Implement	This design suggestion is recommended. The median is currently designed to allow emergency vehicles to turn left out of the fire station driveway while discouraging left turns or u-turns by other vehicles. Modifying the design as suggested will provide a more functional opening for the fire station, and other vehicles can be discouraged from turning through the use of signing and striping.
RD-17	<i>Close median at Mt. Zion Parkway</i>
Do Not Implement	This design suggestion is not recommended. Closing the median at Mt. Zion Parkway was considered during the concept phase of the project. It was determined that closing the median at this location would create serious operational impacts to the Mt. Zion Road intersection, and would also create the need for other improvements outside the limits of the project, such as at the Mt. Zion Road/Conkle Road intersection.
RD-18	<i>Close Home Depot Driveway</i>
Do Not Implement	This design suggestion will be taken into consideration during final design. This is a major access point to the Home Depot shopping center, and would likely create additional pressure on the Mt. Zion Road intersection due to vehicles turning right to access the center at the Mt. Zion Road entrance.

ST-1	<i>Use modular block walls in lieu of gravity walls</i>
Implement	The use of modular block walls will be considered in final design. This alternative is recommended if walls can be designed that provide required structural capacity and conform with the results of the soil survey. Clayton County requests that “No Dig” signage be placed in the vicinity of the walls to avoid potential impacts to geogrid fabric by utility companies in the future.

ST-2	<i>Use Conspan in lieu of box culvert at Panther Creek</i>
Implement Modified	The use of Conspan will be considered in final design. It is unclear at this time how the conspan culvert would connect to the existing double box culvert. The reduction of stream impacts resulting from this alternative is desirable.
ST-3	<i>Use guardrail and pedestrian rail in lieu of parapet</i>
Do Not Implement	This alternative is not recommended. The use of guardrail will create a potentially dangerous obstacle adjacent to the roadway. The concrete parapet located at the top of walls as currently designed provides for at least 16' of clear zone.
ST-4	<i>Reconfigure lanes and sidewalk to utilize new bridge only</i>
Implement Modified	The GDOT Office of Maintenance performed a bridge condition study and recommended the use of carbon fiber stirrups to reinforce the girders on the old bridge. The Maintenance Office made this suggestion due to the relatively low cost of the stirrups, which should be much lower than the \$110 per square foot quoted in the VE Study. The District 7 Design office investigated the cost of carbon fiber stirrups, and found wide variations in costs for various projects around the state. Because the cost of carbon fiber stirrups cannot be accurately determined at this time, the reconfiguration of the bridge will be considered during final design.
ST-5	<i>Perform partial modifications to the existing bridge and abandon remaining portion</i>
Implement Modified	See the above response. The GDOT Office of Maintenance suggested the use of carbon fiber stirrups due to their significantly lower cost in comparison with modification and removal of a portion of the old bridge as suggested. Because the cost of carbon fiber stirrups cannot be accurately determined at this time, the reconfiguration of the bridge will be considered during final design.
ROW-1	<i>Re-align Mill Lake Way and Sandalwood Drive</i>
Implement	This alternative is not recommended. While relocation of Mill Lake Way requires the relocation of several homes, the relocation of Sandalwood Drive would require the relocation of an existing apartment building. Also, a significant grade change is required on Mill Lake Way in order to tie to the proposed Mt. Zion Blvd. Realigning with Sandalwood Drive will still require this grade change, and it is likely that homes on both sides of Mill Lake would still be impacted.
ROW-4	<i>Limit ROW taking and ease construction by segregating widening to one side</i>
Do Not Implement	This alternative is not recommended. The current alignment was selected to avoid right-of-way impacts where possible, and has been presented to the public at a PIOH in June 2005. The alignment was selected to widen to one side where possible, but in some locations, such as at the SR 54 intersection, the alignment is designed for more symmetrical widening to avoid impacts to properties on both sides of the road. Potentially historic structures such as the house on the Bosse Concrete property at the SR 54 intersection were also considered when selecting the alignment.

DR-1	<i>Reduce the amount of dual trunk lines</i>
Implement	This alternative is recommended where feasible. The current design was developed based on calculated runoff volumes, some of which are very large, especially along Battle Creek Road. Single trunk lines were used where possible, however in some locations dual trunk lines were required in order to convey runoff and provide positive fall. The depths of inverts required by larger single trunk lines create difficulty in achieving positive fall.

The District looks forward to discussing these recommendations with your office at your earliest convenience. If you have any questions, please contact Mike Lobdell @ (770) 986-1257.